

Amendments to the Drawings:

The attached sheets of drawings includes changes to Figs. 2, 4, 5 and 6. The attached sheets, which include Figs. 1-6, replace the original sheets filed with the application.

In Fig. 2, the drawing of a chamber 70 has been added. In Figs. 4-6, the drawing of a chamber 200 has been added.

REMARKS/ARGUMENTS

The Office Action (1) objected to the drawings under 37 CFR 1.83(a); (2) objected to the informalities of the disclosure; (3) objected to the informalities of the claims; (4) rejected claims 40-59 under the judicially created doctrine of obviousness-type double patenting; (5) rejected claims 41-50 under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement; (6) rejected claims 40, 41, and 46-50 under 35 U.S.C. 102(b) as anticipated by, or in the alternative, under 35 U.S.C. 103(a) as obvious over Cheng et al. (U.S. 5,304,248 or U.S. 5,851,299); and (7) rejected claims 40-50 under 35 U.S.C. 102(b) as anticipated by, or in the alternative, under 35 U.S.C. 103 (a) as obvious over Stevens et al. (US 5,632,873).

(1) With regard to the objection of the drawings under 37 CFR 1.83(a), Applicant has amended the drawing to overcome the Examiner's objection. Specifically, Applicant has added a chamber drawing 70 and 200 to Fig. 2 and Figs. 4-6, respectively.

The support for the chamber 70 in Fig. 2 is from the paragraph [0006] (as numbered in U.S. Patent Publication No. US 2002/0179014), discussing the drawback of the prior art of Fig. 2, that the chamber 70 needs to be vented before shield replacement, and then chamber 70 needs to be pumped down and conditioned for process qualification. Paragraph [0006] also has been amended to add the reference sign 70 to the chamber of Fig. 2.

The support for the chamber 200 in Fig. 4 is from the paragraph [0040] (as numbered in U.S. Patent Publication No. US 2002/0179014), discussing the apparatus. The apparatus comprises *a stationary wall 176 such as a chamber wall*. Paragraph [0040] also has been amended to replace "chamber wall" with "wall of the chamber 200", showing the reference sign 200 to the chamber of Fig. 4.

The support for the chamber 200 in Fig. 5 is from the paragraph [0041] (as numbered in U.S. Patent Publication No. US 2002/0179014), discussing the apparatus with the mentioning of the wall 176. Fig. 5 shares many common fixtures with Fig. 4, and thus “the wall 176” in paragraph [0041] also has been amended to be replaced with “the wall 176 of the chamber 200”, showing the reference sign 200 to the chamber of Fig. 5.

The support for the chamber 200 in Fig. 6 is from the paragraph [0042] (as numbered in U.S. Patent Publication No. US 2002/0179014), discussing the pressure difference between the cavity and the chamber pressure. “*The cavity 195 retains the purging gas, created a higher pressure in the cavity 195 than in the chamber.*”. Paragraph [0042] has been amended to replace “the chamber” with “the chamber 200”, showing the reference sign 200 to the chamber of Fig. 6.

Thus Applicant submits that the adding of chamber drawing to Figs. 2, and 4-6 does not add new material to the present application.

(2) With regard to the objection to the informalities of the disclosure that the first page of the specification does not reflect the prior applications (U.S. Serial No. 09/589,635 and U.S. 10/195,357), Applicant has amended the specification to include the prior application data.

(3) With regard to the objection to the informalities of the claims of the failure to provide proper punctuation at the end of claims 40, 41 and 51, Applicant has amended the claims to overcome the Examiner’s objection.

(4) With regard to the rejected claims 40-59 under the judicially created doctrine of obviousness-type double patenting for prior U.S. patent 6,440,219 and 6,641,672, Applicant has submitted a Terminal Disclaimer in compliance with 37 CFR 1.321(c) to overcome the nonstatutory double patenting rejection. The current application and the conflicting patents (U.S. 6,440,219 and U.S. 6,641,672) are of the same inventor and assigned to the same assignee.

(5) With regard to the rejected claims 41-50 under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement, Applicant has amended the claim 41 to overcome the Examiner's rejection. Specifically, Applicant has removed the "workpiece replacement chamber" in claim 41.

(6) With regard to the rejected claims 40, 41, and 46-50 under 35 U.S.C. 102 (b) as anticipated by, or in the alternative, under 35 U.S.C. 103 (a) as obvious over Cheng et al. (U.S. 5,304,248 or U.S. 5,851,299), Applicant submits that the present application is distinct and non-obvious from the prior art of Cheng et al.

Cheng discloses a silicon wafer processing shield comprising a workpiece support (40) for supporting the workpiece, and a shield (50) also made out of silicon (col. 4, lines 60+). Cheng is silent concerning the shield being of comparable weight as the workpiece and being replaceable.

The present application discloses a wafer processing shield having 2 features:

- being of comparable weight as the workpiece; and
- allowing replacement of the shield in the same way as the replacement of the workpiece.

Applicant submits that not only is Cheng silent regarding these two features, Cheng also could not anticipate or render obvious these two features.

Even though Cheng is silent regarding the weight of the shield of his invention, one could estimate its weight by its volume. The thickness of Cheng's shield 50 can be estimated to be about 4 to 8 times the thickness of the workpiece 10 as shown in Figs. 2, 3, 5, 6, 7, and 8. Fig. 4 shows the shield to be circular with a diameter about 3 to 4 times the workpiece diameter, or about 9 (3 x 3) to 16 (4 x 4) times the workpiece area. Therefore, the volume of Cheng's shield

50 can be estimated to be about 36 to 128 times the volume of the workpiece 10. Using the same material, meaning the same density, the weight of Cheng's shield is estimated to be 36 to 128 times the weight of the workpiece. Knowing that this is only an estimate, and knowing that one has to account for the disproportion of the drawings, but the information one gets from Cheng's disclosure in the absence of Cheng's explanation is that the weight of Cheng's shield is many times more than the weight of the workpiece, and that one could not anticipate from Cheng's disclosure that the shield is of comparable weight as the workpiece.

Regarding the second feature of the present application of allowing the shield to be replaced in the same way as the replacement of the workpiece, this implies that:

- the shield has to be able to fit through the process chamber opening because that is the way that workpiece is replaced; and
- the shield has to have support feature to accommodate the workpiece replacement robot arm because the same workpiece replacement robot arm will replace the shield.

Cheng is also silent regarding the process chamber opening, but one can infer the dimension of the process opening by Maydan et al. (U.S. patent 4,951,601), which is made a cross-reference by Cheng. In Maydan, Fig. 16-19, sheet 6 of 7 (see figure attached), the process chamber opening 36 is only slightly larger than the workpiece 15, therefore could not accommodate the shield 3 to 4 times larger in diameter than the workpiece. Using this information, together with Cheng's silence on the subject, the Applicant submits that no one skilled in the art could anticipate or render obvious that Cheng's shield can be replaced in the same way as the replacement of the workpiece.

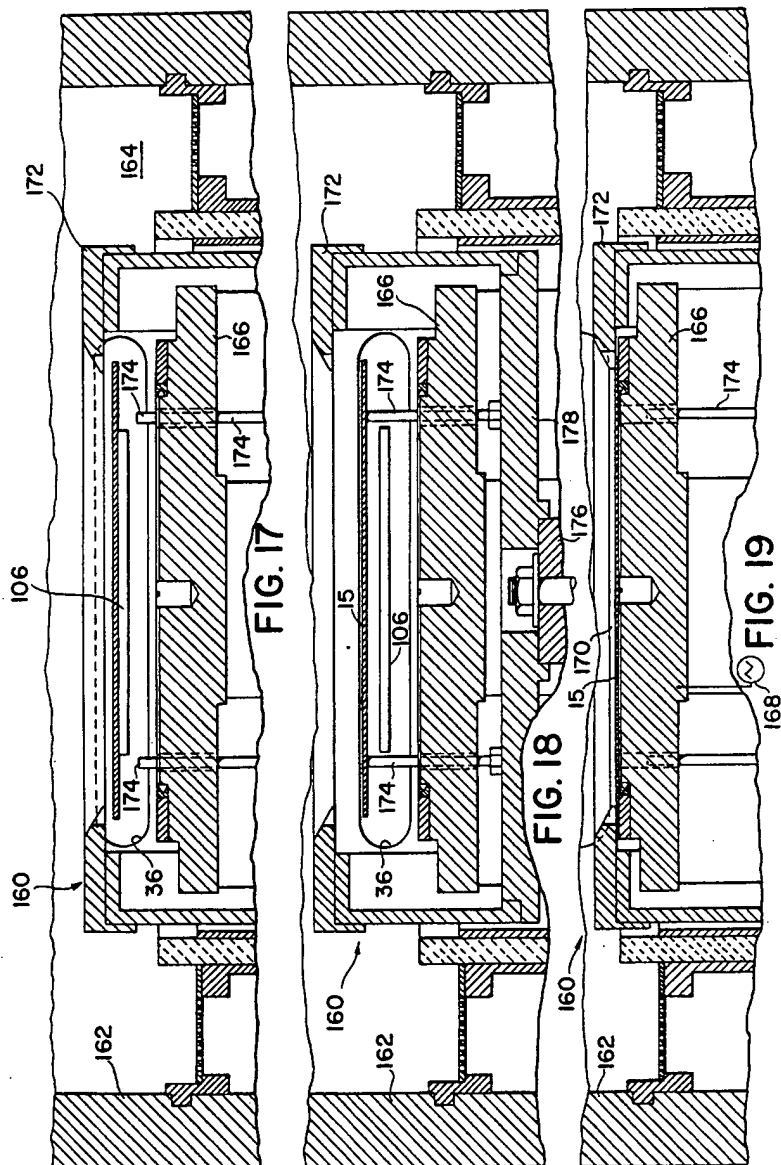
Cheng is also silent regarding the way the workpiece and the shield can be replaced. Using the same information from Maydan (Fig. 16-19, sheet 6 of 7), the workpiece 15 is shown

to be brought into the process chamber by a robot arm 106 with support pins 174. Fig. 2 of Cheng shows the lift tube means 48 in a retracted position, resulting in the susceptor 40 and the wafer 10 thereon being in a lower position (also shown in Fig. 3). From the drawing of Fig. 2, Applicant submits that no one skilled in the art can anticipate or render obvious that a robot arm that is used to replace the workpiece 10 can be used to replace the shield 50, because the bottom of the shield 50 is shown to be lower than the top of the workpiece 10.

In summary, Applicant submits that Cheng's shield does not provide the two features of the present application, namely

- being of comparable weight as the workpiece; and
- allowing replacement of the shield in the same way as the replacement of the workpiece.

Therefore, the present application is distinct and cannot be anticipated nor rendered obvious from Cheng et al.'s.



(7) With regard to the rejection of claims 40-50 under 35 U.S.C. 102 (b) as anticipated by, or in the alternative, under 35 U.S.C. 103 (a) as obvious over Stevens et al. (US 5,632,873), Applicant submits that the present application is distinct and non-obvious from the prior art of Stevens et al.

Stevens discloses a silicon wafer processing shield comprising a workpiece support (20) for supporting the workpiece, and a shield (11) also made out of a desired lightweight material (col. 14, lines 50+). Stevens is also silent concerning the shield being of comparable weight as the workpiece and being replaceable.

Similar to Cheng, Applicant submits that not only Stevens is silent regarding these two features of the present application, Stevens also could not anticipate or render obvious these two features.

Regarding the first feature of the present invention of comparable weight between the shield and the workpiece, Stevens discloses (col. 14, lines 59+) that his shield should be weighted to provide a total force sufficient to overcome the adhesive strength of the bridging layer formed of the deposited material, estimated to be 0.25 to 2 pounds (113 to 907 g). Knowing that a 8" semiconductor wafer weighs about 53 g, the shield 11 of Stevens weighs about 2 to 17 times the workpiece. Therefore, anyone skilled in the art could not anticipate from Stevens's disclosure that the shield is of comparable weight as the workpiece.

Regarding the second feature of the present application of allowing the shield to be replaced in the same way as the replacement of the workpiece, Stevens is silent regarding the replacement of the shield 11. However, by inspecting the drawings (Figs. 1, 2, 6 and 7), and by Stevens' description, the shield 11 upper motion is blocked by the outer ring 12, and the shield 11 lower motion is blocked by either the support 20 or the wall support 24. Stevens' disclosure provides

no provision for the shield 11 to be replaced by the robot arm that is used to replace the semiconductor wafer or substrate 26. Applicant submits that no one skilled in the art can anticipate or render obvious from Stevens' disclosure that the shield 11 can be replaced in the same way as the replacement of the semiconductor wafer 26.

In summary, Applicant also submits that Stevens' shield does not provide the two features of the present application, namely

- being of comparable weight as the workpiece; and
- allowing replacement of the shield in the same way as the replacement of the workpiece.

Therefore, the present application is distinct and cannot be anticipated nor rendered obvious from Stevens et al.'s.

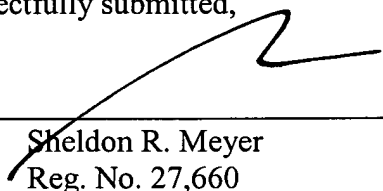
Applicant respectfully submits that no new matter has been added by the foregoing amendments. Moreover, Applicant submits all claims of the present application are patentable over the prior art.

Applicant respectfully requests that a timely Notice of Allowance be issued in this case.

The Commissioner is authorized to charge any underpayment or credit any overpayment to Deposit Account No. 06-1325 for any matter in connection with this response, including any fee for extension of time, which may be required.

Date: 9/19/65

Respectfully submitted,

By: 
Sheldon R. Meyer
Reg. No. 27,660

FLIESLER MEYER LLP
Four Embarcadero Center, Fourth Floor
San Francisco, California 94111-4156
Telephone: (415) 362-3800



Appl. No: 10/636,020
Reply to Office Action of June 15, 2005
Annotated sheet showing changes

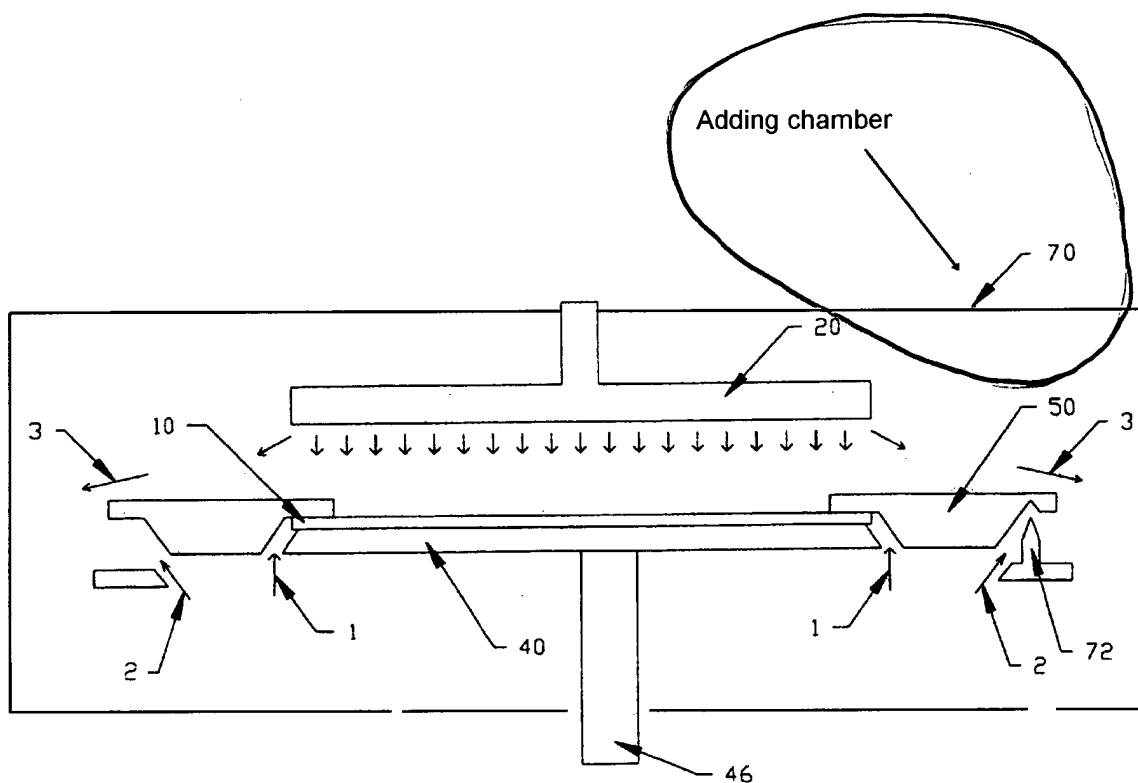
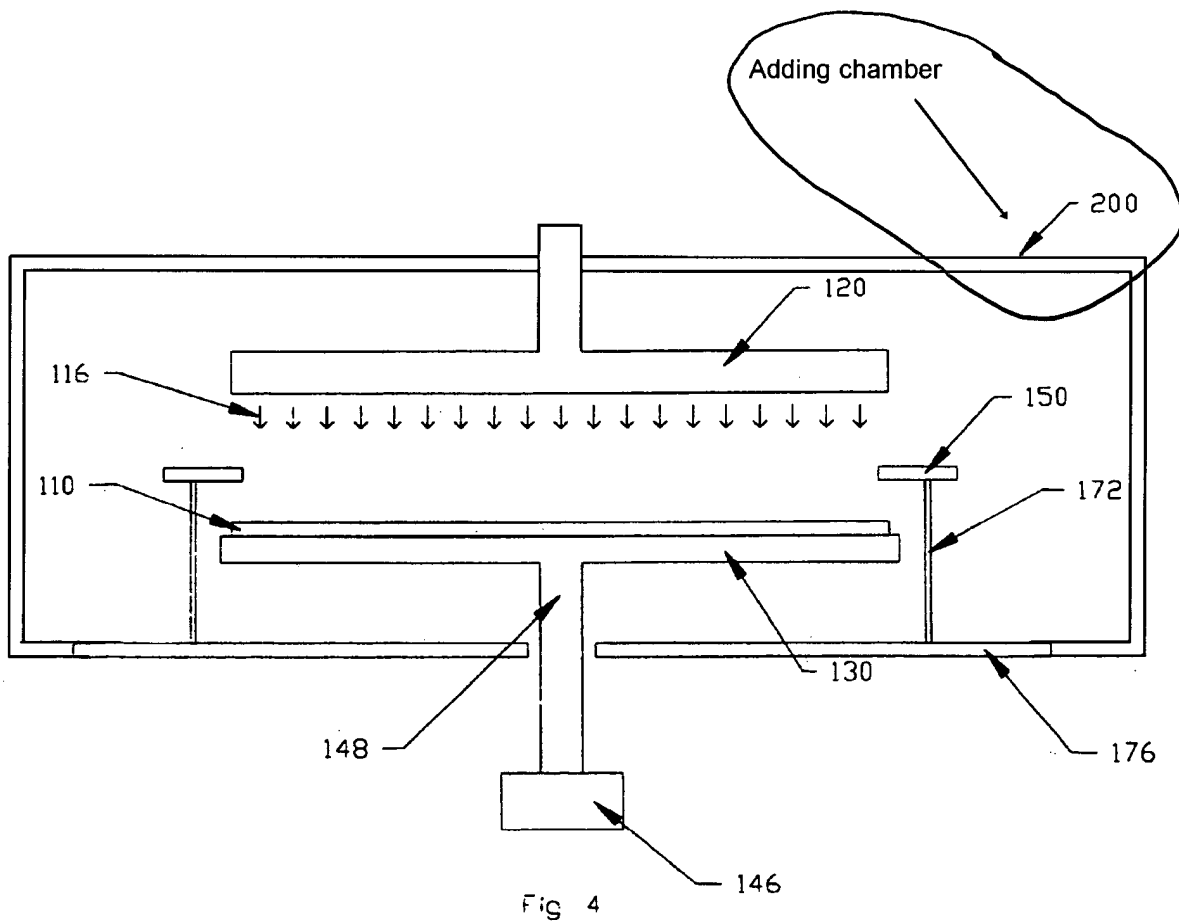
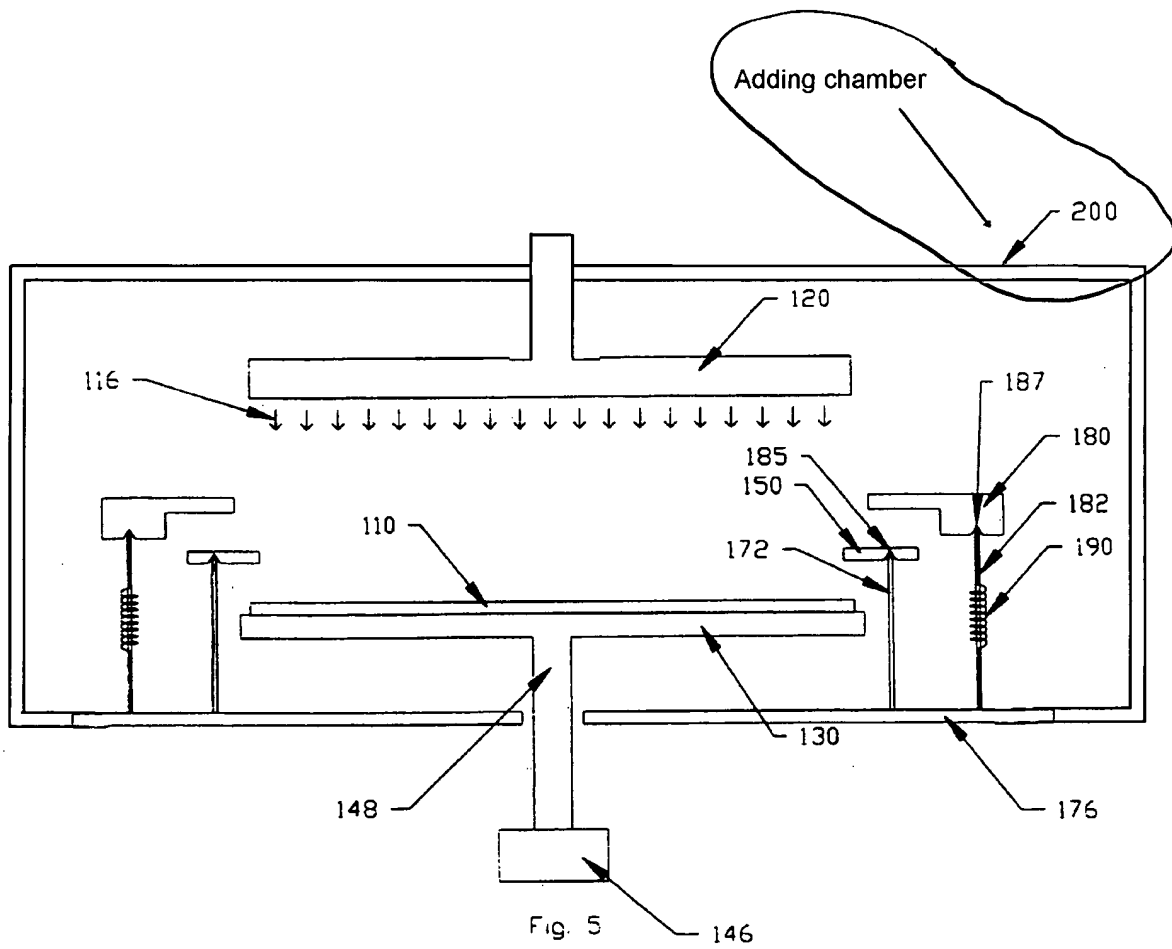


Fig. 2 (Prior Art)





Appl. No: 10/636,020
Reply to Office Action of June 15, 2005
Annotated sheet showing changes

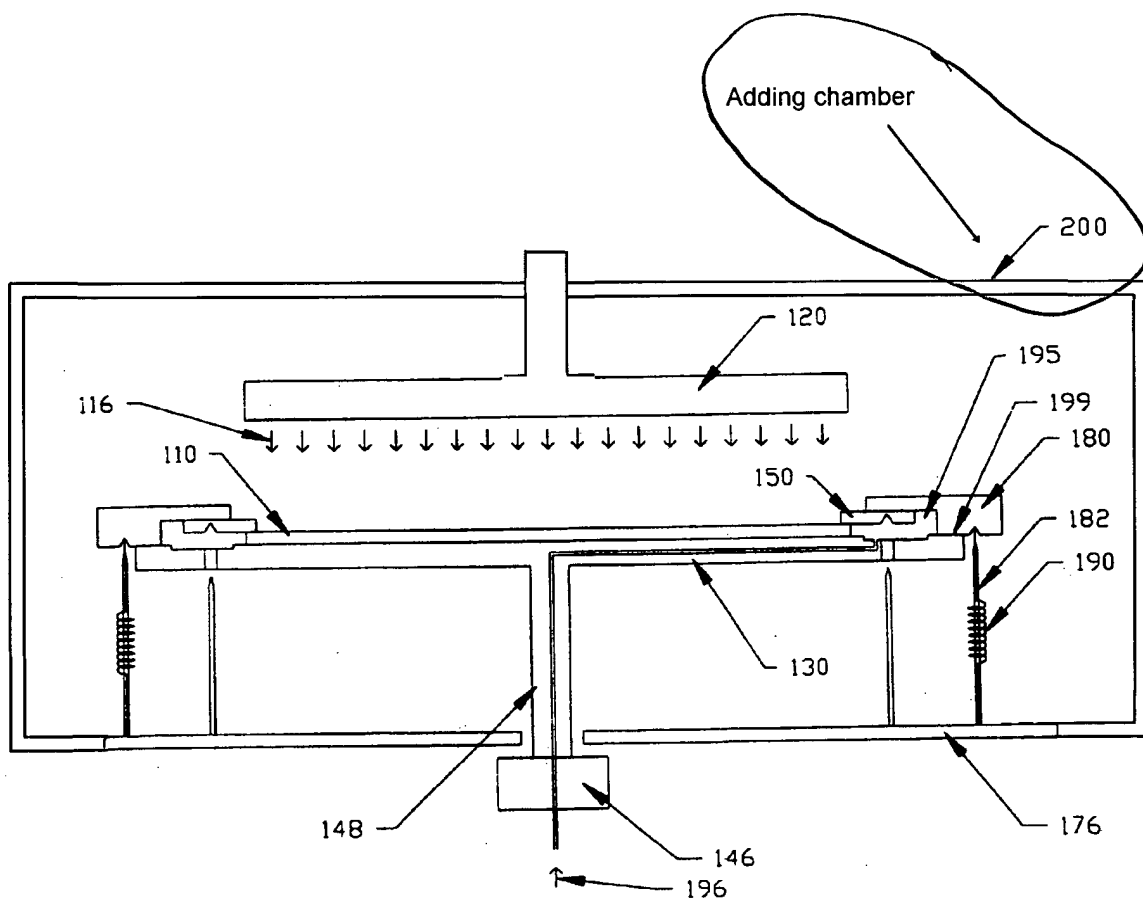


Fig. 6